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09/351,147	07/12/1999	ARTHUR W. CHESTER	10164-1	9325

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EXXONMOBIL CHEMICAL COMPANY  
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EXAMINER

GRIFFIN, WALTER DEAN

ART UNIT	PAPER NUMBER
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1764

23

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Please find below and/or attached an Office communication concerning this application or proceeding.



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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Paper No. 23

Application Number: 09/351,147  
Filing Date: July 12, 1999  
Appellant(s): CHESTER ET AL.

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Laurence P. Hobbes  
For Appellant

**MAILED**  
**MAY 17 2002**  
**GROUP 1700**

EXAMINER'S ANSWER

This is in response to the appeal brief filed on March 25, 2002.

**(1) Real Party in Interest**

A statement identifying the real party in interest is contained in the brief.

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**(2) *Related Appeals and Interferences***

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct.

**(4) *Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) *Summary of Invention***

The summary of invention contained in the brief is correct.

**(6) *Issues***

The appellant's statement of the issues in the brief is correct.

**(7) *Grouping of Claims***

Appellant's brief includes a statement that claims 1-10 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

**(8) *Claims Appealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(9) *Prior Art of Record***

EP 0323736

NEMET-MAVRODIN

07-1989

5,898,089

DRAKE ET AL.

04-1999

**(10) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

Claims 1, 2, 5, 7, and 10 stand rejected under 35 U.S.C. 102(b) as being anticipated by EP 0323736.

The EP reference discloses a process for converting a C<sub>5</sub> to C<sub>10</sub> paraffinic hydrocarbons into aromatic hydrocarbons and light olefins. The feed to be converted can be a coker gasoline, light FCC gasoline, C<sub>5</sub> to C<sub>7</sub> fractions of straight run naphtha and pyrolysis gasoline. These feeds would necessarily boil within the claimed ranges. The process comprises contacting the feed with a catalyst comprising ZSM-5 or ZSM-11. The zeolite may have a silica to alumina ratio of 100 or less. The zeolite may be treated with a phosphorus compound. The catalyst also contains a binder material that may be an inactive material such as clay. Active matrix material is not required. Therefore, the limitation that the catalyst contains less than 20 wt.% of active matrix is embraced by the EP reference. Since the process of the EP reference converts the same feeds as claimed with the same catalyst as claimed, the product composition must inherently contain the components in the amounts claimed in claims 7 and 10. See page 2, lines 33-42, page 3, lines 21-54, page 4, lines 11-53, and page 5, lines 13-35.

***Claim Rejections - 35 USC § 103***

Claims 3, 4, and 6 stand rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0323736.

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The EP reference discloses a process for converting a C<sub>5</sub> to C<sub>10</sub> paraffinic hydrocarbons into aromatic hydrocarbons and light olefins. The feed to be converted can be a coker gasoline, light FCC gasoline, C<sub>5</sub> to C<sub>7</sub> fractions of straight run naphtha and pyrolysis gasoline. These feeds would necessarily boil within the claimed ranges. The process comprises contacting the feed with a catalyst comprising ZSM-5 or ZSM-11. The zeolite may have a silica to alumina ratio of 100 or less. The zeolite may be treated with a phosphorus compound. The catalyst also contains a binder material that may be an inactive material such as clay. The ratio of binder to zeolite may be at least 70:30. Conversion conditions include temperatures ranging from 100° to 700°C, a pressure from 10.1 to 720 kPa (1.5 psi to 104 psi), and a WHSV from 0.5 to 400. See page 2, lines 33-42, page 3, lines 21-54, page 4, lines 11-53, and page 5, lines 13-35.

The EP reference does not disclose the claimed amount of phosphorus in the catalyst and does not disclose all the claimed reaction conditions.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the EP reference by including phosphorus in the amounts claimed because one would utilize phosphorus amounts including those that are claimed in order to provide a process that results in the desired type of conversion.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the EP process by utilizing a catalyst/hydrocarbon feed weight ratio within the range claimed because one would utilize any ratio the would result in the effective conversion of the hydrocarbons to the desired product.

Claims 8 and 9 stand rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0323736 as applied to claim 1 above, and further in view of Drake et al. (5,898,089).

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As discussed above, the EP reference does not disclose the co-feeding of steam with the feed.

The Drake reference discloses the co-feeding of steam with the feed. The weight ratio of the steam can range from about 0.1:1 to about 10:1. See col. 8, line 66 through col. 9, line 21.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the EP process by including steam with the feed in the amount claimed as suggested by Drake because effective conversion to olefins and aromatics would be expected.

**(11) *Response to Argument***

The argument that the EP 0323736 reference does not positively recite introducing phosphorus oxide is not persuasive for the following reasons. The reference discloses on page 3, lines 42-54, that the zeolite may optionally include various elements ion exchanged, impregnated, or otherwise deposited thereon. Although the inclusion of these elements is not preferred, the reference clearly discloses that they could be included in the catalyst. Having established that the reference discloses the inclusion of additional elements, the reference then needs to be analyzed to determine if phosphorus is one element that could be included in the catalyst. The reference discloses that the zeolites can be free of oxides incorporated into the zeolites by impregnation and then gives examples of these oxides that include oxides of phosphorus. The use of the language "can be free" also indicates that the zeolites can include these oxides. Therefore, it would follow that the zeolites could include phosphorus in the form of phosphorus oxide.

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The argument that there is no requirement or suggestion in the EP 0323736 reference that the catalyst contains less than 20 wt.% of active matrix material is not persuasive for the following reasons. This claimed range includes zero percent as a lower limit. In other words, the claimed catalyst does not have to contain any active matrix material. The EP 0323736 reference teaches on page 4, lines 11-14 that the zeolites are incorporated with another material resistant to the temperatures and other conditions employed in certain organic conversion processes. The reference then goes on to disclose that these materials include active and inactive materials. The examiner maintains that this teaching clearly discloses that the material may be all inactive material. This would necessarily read on a range of active matrix that includes zero percent active matrix as a lower limit. The examiner does not see any way that the language in the referenced section can be interpreted to mean that the matrix must include both active and inactive materials. If this were the case, then the language would have to be interpreted as the matrix must include a combination of active material, inactive material, zeolites, clays, silica, and metal oxides. A fair reading of the reference does not support this interpretation however. Further evidence that the catalyst does not have to contain any active matrix is contained in Examples 1-3. These examples disclose a catalyst that contains a silica and clay matrix. This matrix is the same as claimed in present claim 5.

The argument that there is no motivation to combine the EP 0323736 and Drake (US 5,898,089) references is not persuasive. Both references disclose similar processes for producing aromatics. Therefore, the examiner maintains the use of the steam diluent as disclosed by Drake would be expected to also be effective in the process of the EP 0323736 reference.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

*Walter D. Griffin*

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Primary Examiner

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May 14, 2002

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